NDRC Project Proposal Template

Name of Locality Proposing Project:	City of Norfolk
Target Area To Be Served By Project:	Shoreline of Elizabeth River

Project Description

A. Project Description *(provide short narrative)*	The City of Norfolk has a 300 year history as a seaport region that derives its economic vitality from the water. It has long been a nationally important hub for shipping and for projecting US Naval strength. In recent decades, the City of Norfolk has been experiencing increased flooding as a result of subsidence and sea level rise. In some neighborhoods, storm water systems no longer function at high tide, resulting in rainwater ponding on roadways and in residential properties during relatively minor rain events. These recurrent flooding issues have undermined Norfolk's ability to thrive on the waterfront and potentially jeopardize the community's economic vitality by disrupting commerce and commuting, availability of municipal services, livability, and desirability as a port for commercial and military activities. Recent damage from Hurricane Irene revealed the vulnerabilities of the region as a whole and the vulnerabilities of several working class neighborhoods that are particularly flood prone. Consequently, the City of Norfolk is exploring options to improve the City's resilience to present and future precipitation and storm surge events. The City of Norfolk desires to participate in a holistic regional resiliency approach that extends beyond infrastructure to encompass community and economic development. That is, the development of infrastructure and water management approaches will be informed by, and work in concert with, enhancing the health and wellbeing of citizens and stimulating economic growth. Within the citywide flooding defense system are several weak links that need to be addressed. A reach of the Elizabeth River between the downtown area and the neighborhoods of Chesterfield Heights and Granby Village has remained unprotected and vulnerable to flooding from storm surge; adjacent neighborhoods are equally vulnerable to rainfall flooding during high tide. Moreover, flooding along this part of the river blocks major transportation routes and interrupts public transportation. Several valuable river front properties

	remain undeveloped and vacant because of recurrent flooding. The City proposes to upgrade the surge protection and storm water conveyance system along this reach of the river to address flooding of the vulnerable communities, to fortify the overall flood protection system, to re-connect LMI neighborhoods with the economic center and shore line of the city, to promote mixed-income, multi-use development, and to stimulate economic revitalization of the underused riverfront properties. In this way, the City wants to preserve its seaport heritage, and to thrive for another century at the water's edge.
B. Project Product(s)/Deliverable(s)/Outcomes	The overarching project outcomes are to unite the region, create coastal resilience, implement innovative storm water management, improve economic vitality, and strengthen vulnerable neighborhoods. This comprehensive approach capitalizes on the region's strengths and converts risks and vulnerabilities into opportunities: Hampton Roads will reduce risk to its most vulnerable communities and thrive with water by developing a model maritime region that derives its economic vitality from its position on the water. The project outputs that will drive the desired outcomes are flood protection, water management, economic development, improved multi-model transportation, restoration of natural systems and enhanced connectivity in and between several neighborhoods along the Elizabeth River. The low lying landscape and close proximity of these neighborhoods requires a comprehensive and integrated water management approach, otherwise flooding from one neighborhood will impact adjacent neighborhoods. However, the integrated water management approach will require site specific components to accommodate the various uses of the waterfront. For instance, historic residential communities require different treatment and have different opportunities than industrial and commercial locations. Thus, site specific measures within one systemic project are defined as follows: **Ohio Creek Watershed (Chesterfield Heights Area):** 1. Innovative parcel scale storm water retention on residential properties that incorporates, builds upon and refines community-chosen designs developed

	and engineered by Hampton University, Old Dominion University and Wetlands Watch. Public outreach and education about storm water, flooding and water quality that builds upon and incorporates best strategies and lessons learned from the successful Ripple Effect Water Literacy Project piloted in New Orleans after Katrina. Incentivize participation with discounted city fees. 2. The parcel scale storm retention on residential properties described integrates green infrastructure into existing streets (bio-retention, pervious pavement, permeable bike paths, rain gardens, etc). 3. Subgrade rainwater storage (below several existing streets). 4. Acquisition of several parcels imperiled by low elevation and proximity to flooded areas and turning them into multi-purposed open space and recreational amenities. 5. Strengthen and increase capacity of multiple storm water retention areas while simultaneously increasing wetland habitat areas. 6. Raise several road locations to prevent tidal flooding and to maintain safe/dry egress from the neighborhood. 7. Flood protection berm along shoreline that is integrated with onshore park and recreation areas and with offshore marsh restoration activities being pursued by others (Elizabeth River Project). 8. Backflow prevention at all storm water outfalls and pumps deployed to move precipitation over the shoreline berm. 9. Improved bicycle and sidewalk connectivity within the neighborhood as a result of the components above. **Newton Creek Watershed (inclusive of St. Paul's, Harbor Park, Brambleton):** 1. Continuation of shoreline flood protection berm that physically reconnects several neighborhoods and connects residents to green/open space waterfront. 2. Flood wall fortification around the primary electrical sub-station. 3. Small section of elevated road to redirect water and maintain access. 4. In Harbor Park area, the flood protection berm will be implemented as landscaped promenade to promote development of tourism, recreation, commercial, and

	residential opportunities around the existing minor league ball park. 5. Short section of the Light Rail transit system will be re-aligned to move it out of flood-prone area and to provide additional development opportunities adjacent to the ball park. 6. Conversion of multiple city-owned parcels into water park amenities that provide recreation opportunities and bike and walkway conveyance between neighborhoods, reconnecting LMI population to downtown and adjacent areas. This is an innovative water park and greenspace that extends up the watershed and provides weirs and water control features to provide recreational and aesthetic value while also providing substantial capacity for storm water detention. 7. Several backflow prevention devices and a moderate flood gate will provide necessary disconnect between surge/tidal flooding and upland storm water management (all designs in this proposal incorporate future projections of sea level rise, tidal and storm surge flooding. Pumping capacity will be provided to move storm water over the berm to the river when gates are closed due to high tides/surge. 8. Outdated public housing located in flood-prone areas will be replaced with mixed-income, mixed-use neighborhood landscape. (This is not specifically part of the NDRC ask, but is a crucial feature of the long-term vision that we will conveyed in the application. This will be funded as leverage. No affordable housing will be lost by the implementation of this project.) 9. New road connections will be made between downtown, St Paul's, Harbor Park, and Brambleton. This connectivity is presently missing in the area. Historic Church St (African American business district) will also be re-developed as a main thoroughfare in the neighborhood. Greater connectivity will promote social equality and economic revitalization 10. Parcel scale, onsite water retention for existing neighborhoods (similar as deployed in Ohio Creek Watershed). 11. Zoning & commitment by the City to require green infrastructure, on-site water retention and housing restrictions on all new development in the renovated portions of the community.

C. **Alternatives Considered** *(NOFA, p.43)*	Several other communities in Norfolk were considered. However, the selected locations present a much stronger opportunity for economic development and the selected locations align favorably with HUD's National Objective to directly benefit low- and moderate-income persons and households by focusing on unmet recovery needs, as well as build regional resilience capacity to manage extreme weather events and adapt to sea level rise. Within the selected regions, several alternatives were considered for aspects of flood control and water management. Additionally, more extensive property acquisition and coastal retreat were explored, but found unfavorable in terms of desired outcomes (more to come here…)
D. **Key Project Objectives – How does it fit with the approach, *thRIVe: Resilience In Virginia*?** *(Appendix H, p.5)*	The specific activities and outputs described above in Section B will all promote the *thRIVe* approach. • Only projects that are prototypical, replicable and applicable to similar regional typologies were considered. The target area includes several regionally critical transportation hubs, a number of which serve the military and major regional businesses (e.g. Titan America). The project will enhance and protect vitality of downtown – urban core of the region. The public outreach and education component together with parcel-scale rainwater detention projects help to unite the region by promoting a "we are all in this together" approach to flood mitigation and individual participation in regional storm water management. • Disconnecting tidal and precipitation dynamics plus implementation of parcel-scale measures, green infrastructure, and distributed storm water detention will help to create flood resilient communities. • New green spaces and water park amenities, bicycle and walking paths, and mixed-use areas promote strong, connected and more socially equitable neighborhoods that are human-scale and walkable, and which promote healthier lifestyles through the use of enhanced recreational spaces. • New investment and economic revitalization opportunities will be created by solving the recurrent flooding problem, thereby making undeveloped parcels attractive to developers. New businesses and commercial establishments will provide new sources of LMI jobs and revenue

	for the neighborhood. • The new urban landscape of St.Paul's Quadrant layered over the integrated water management projects will provide xxx of new apartments for the LMI community within a mixed-income neighborhood that will be a desirable neighborhood of choice. • The approach of designing a neighborhood around a green storm water management system is both innovative and increases resilience. • New street networks and extensive bicycle and walking pathways will help unite and strengthen the City, and will provide a desperately needed connectivity that can promote economic equality and a new social cohesion in the target areas. Social cohesion includes the sense of pride that residents can develop in their neighborhood. This in turn elevates the desirability of the neighborhood, and gives residents power in decision making. • More to come…
E. **Metric(s) for Resiliency Value - provide at least one** *(NOFA, p. 43*) *Examples may include: value of protection from the effects of future/repeat disasters, including, but not limited to, flood, wind, fire, earthquakes; Reduction of expected property damages due to future/repeat disasters; Reduction of expected casualties from future/repeat disasters; Value of reduced displacement caused by future/repeat disasters; Reduced vulnerability of energy and water infrastructure to large-scale outages*	• Reduction of property damage from flooding. • Ability for the region to handle most rain and surge events without the inconvenience and economic losses presently experiences. • More to come…
F. **Metric(s) for Environmental Value - provide at least one** *(NOFA, p. 43*) *Examples may include: Ecosystem and bio diversity effects (e.g. from wetlands restoration or reforestation); Reduced energy use; Noise levels; Climate change – Reduced Greenhouse Gas emissions; Air Quality – Reduced criteria pollutants (nitrogen dioxide (NO2), ozone (03), sulfur dioxide (SO2) and particulate matter of aerodynamic diameter of the micrometers or fewer (PM-10); Water quality – reduced storm water runoff; Reduced urban heat-island effect*	• Extensive green approach to detain stormwater will increase conveyance time and reduce TMDLs. • Improved water quality in Elizabeth River and Chesapeake Bay. • Promote light rail, bicycle, and walking to reduce automobile use. • Increase employment opportunities within neighborhood (walk to work). • Increased marsh habitat. • Increased grass, trees, bio-diversity within urban landscape. • We are developing baselines for the above to demonstrate our ability to measure the outcome and adjust as needed (iterative, adaptive, learning – qualities of resilience)

G **Metric(s) for Social Value** (provide at least one; *NOFA, p. 43*) *Examples may include: Reductions in human suffering (lives lost, illness from exposure to environmental contamination, asthma and cancer rates in low income and minority populations living in areas with greater environmental risk); Benefit to low- and moderate-income persons and/or households;* *Improved living environment (such as elimination of slum and blight conditions, improved community identity and social cohesion, improve recreational value, greater access to Cultural, historic, archaeological sites and landscapes, equal access to resilient community assets); Greater housing affordability*	• Improved living conditions. • Psychological benefits of mixed-income community. • Walkable and aesthetically pleasing communities. • Reduced stress from concerns about flooding. • More dependable municipal services and transportation. • Reduced suffering during recurrent flooding. • Local job opportunities
H. **Metric(s) for Economic Revitalization - provide at least one** *(NOFA, p. 43*) *Examples may include: Direct effects on local or regional economy (e.g. tourism revenue) net of opportunity costs; Value of property other than through enhanced flood protection, independent of increases in property value captured by other benefits in the BCA or that might otherwise have occurred without the proposed project.*	• Increasing property values. • Desirable neighborhoods entice new businesses, new industries (local microbrewery). • New revenue streams for the City. • Economic resiliency by broadening and diversifying the types of jobs and opportunities available. • (We are currently developing specifics metrics and baselines for the above…)
I. **Timeline for Completion** *(NOFA, p. 43; Crosswalk Checklist, p. 3)* **- A program schedule for completion of the project within 24 months is required (5 Points)**	• Development of a program schedule is currently underway and includes waivers where necessary. • Only projects that can be completed in the allotted grant period are being considered.
Project Information Required for Phase Two Application	
J. **Discuss how the project has been informed by citizen input and public engagement**	• We are currently working on a narrative that describes how this effort is a continuation of all the work and community engagement the City has done over the years with the St. Paul's master plan and Norfolk Redevelopment and Housing Authority. In the current iteration for the NDRC, we are taking it a step further by incorporating community-informed Dutch Dialogues resilience-enhancing concepts further refined by Arcadis. In addition to our weekly workshops with Arcadis that include main community

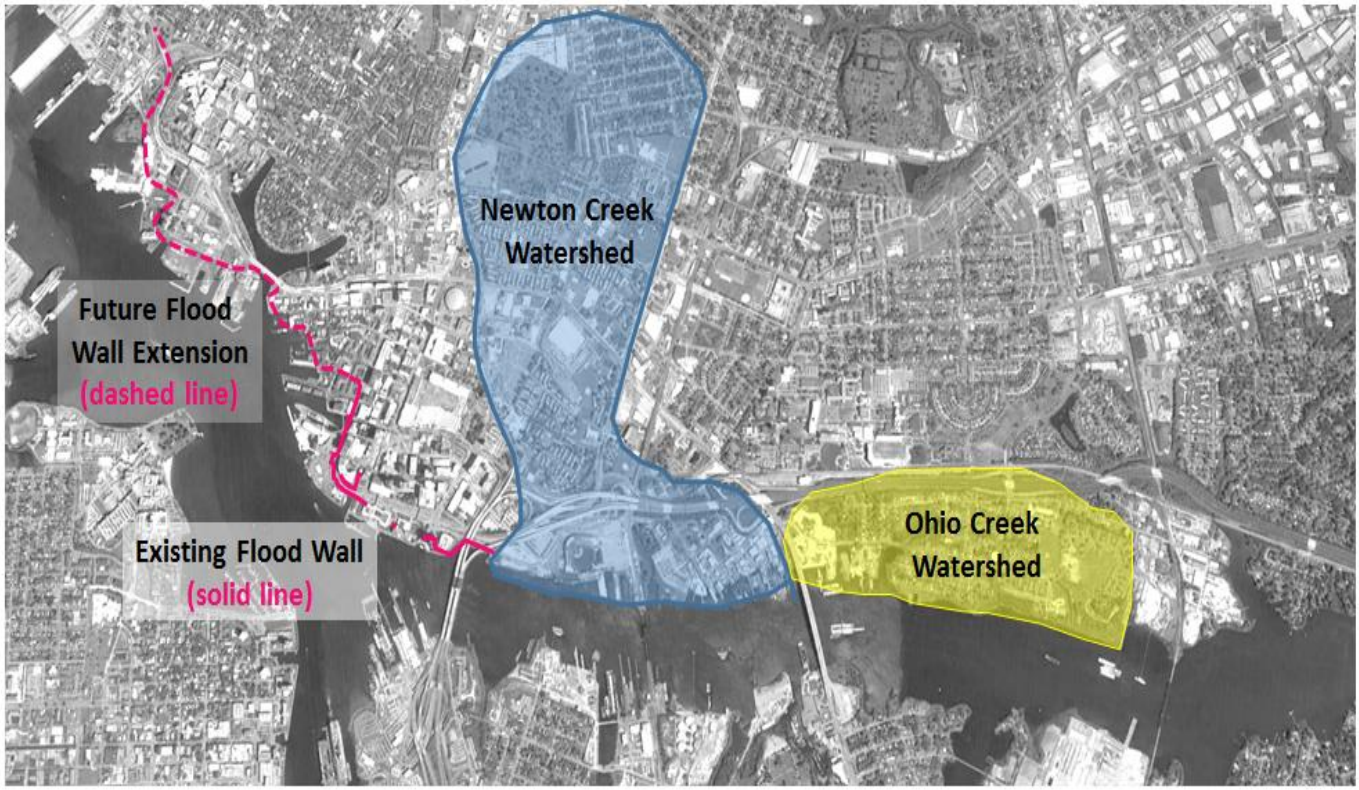
	leaders from the respective areas, we have a number of major community engagements scheduled for September. These will incorporate requirements for environmental review and a survey that will enhance the "social" component of our BCA. • Also, the Chesterfield citizenry has been involved for several years with the ODU/Hampton U/Wetland Watch project. • Dutch Dialogues • Via Neighborhood Specialists, Wetlands Watch, Elizabeth River Project (Star communities) • Planned public hearing and website feedback. Additional outreach specific to this NDRC application is ongoing.
K. **Discuss how the project was coordinated with other Community Entities** (Business, Military, etc.) **and Neighboring Jurisdictions** (Cities, Counties, and States)	• Steering Committee • HRPDC • Dutch Dialogues • Regional workshop • Meetings with Partners from Phase I underway • Weekly workshops with Arcadis that bring in key external community partners/entities • Community engagement in neighborhoods
L. **Evidence of tieback to Hurricane Irene Disaster**	These neighborhoods flooded during Irene, but if the new shoreline berm and other components outlined above had been in place during August 2011, the flooding would have been prevented. As evidenced by the windshield survey, neighborhoods were not repaired resiliently.
M. **Discuss how project meets one of the 3 CDBG National Objectives:** - *Benefits low- and moderate-income persons.* - *Prevents or eliminates blight.* - *Meets other urgent community development needs because existing conditions pose a serious and immediate threat to the health or welfare of the community, and other financial resources are not available.*	This project directly benefits LMI households, with a population of greater than 51% within the target area. LMI persons will be benefitted by greater protection from extreme flooding events, preventing further damage to their homes, and increasing quality of life.

N.	**Explain how this project ties back to the approach, *thRIVe: Resilience In Virginia***	See section D above.
O.	**How does the proposed project respond to and address Unmet Recovery Need(s) And Framed Recovery Issues identified?** *(NOFA, p. 43; Crosswalk Checklist, p. 3)*	The project directly addresses the target area damaged by Hurricane Irene, where there is still damage from the storm. A Windshield Survey, performed in Q1 2015, indicates that there is still damage in Census Tract 49 (Harbor Park and St. Paul's Quadrant) and Census Tract 46 (Chesterfield Heights).
P.	**How does this project increase resilience of the MID-URN Target Area, and Region or State?** *(NOFA, p.43; Crosswalk Checklist, p.3)*	Described above.
Q.	**How will this project decrease risk to identified vulnerable populations?** *(NOFA, p.43)*	The project and its various components will directly protect LMI homes and LMI households, decreasing risk of further damage from extreme flooding events. (We are currently analyzing the exact characteristics of the vulnerable populations in the target area, with focus on seniors, unemployed, children under age 5, non-English speaking populations, disabled people, households without vehicles or that drive unusual distances for work, etc.
R.	**Is the project replicable – how is it a model for other communities?** *(NOFA, p. 43; Crosswalk Checklist, p. 3)*	Yes, very replicable. Working on graphics and maps to indicate where various components can be deployed in other neighborhoods around Norfolk and Chesapeake Bay, as well as in any coastal or riverine area anywhere in the nation. Work in progress.
S.	**Risks if the project is not implemented** *(Appendix H, p.5)* **at 5, 20, 50 years?** **What would be the impact on the community as a whole and any vulnerable populations identified?**	• Population flight from target area • Risk of blight, or greater blight, within areas that are more consistently flooding • Reduced QOL, reduced neighborhood connectivity
T.	**Describe project feasibility and effectiveness in providing protection from current and future threat(s)/hazard(s), including those associated with climate change.** *(NOFA, p. 43-44)* **Include the following:** • **Expected level of protection once**	• Level of protection exceeds the Qualifying Event (Irene). • Level of protection approximately equal to the 1% chance surge event plus SLR projections for 2065 • Level of protection approximately equal to the 10% chance precipitation event. • Expected project life = 50 years.

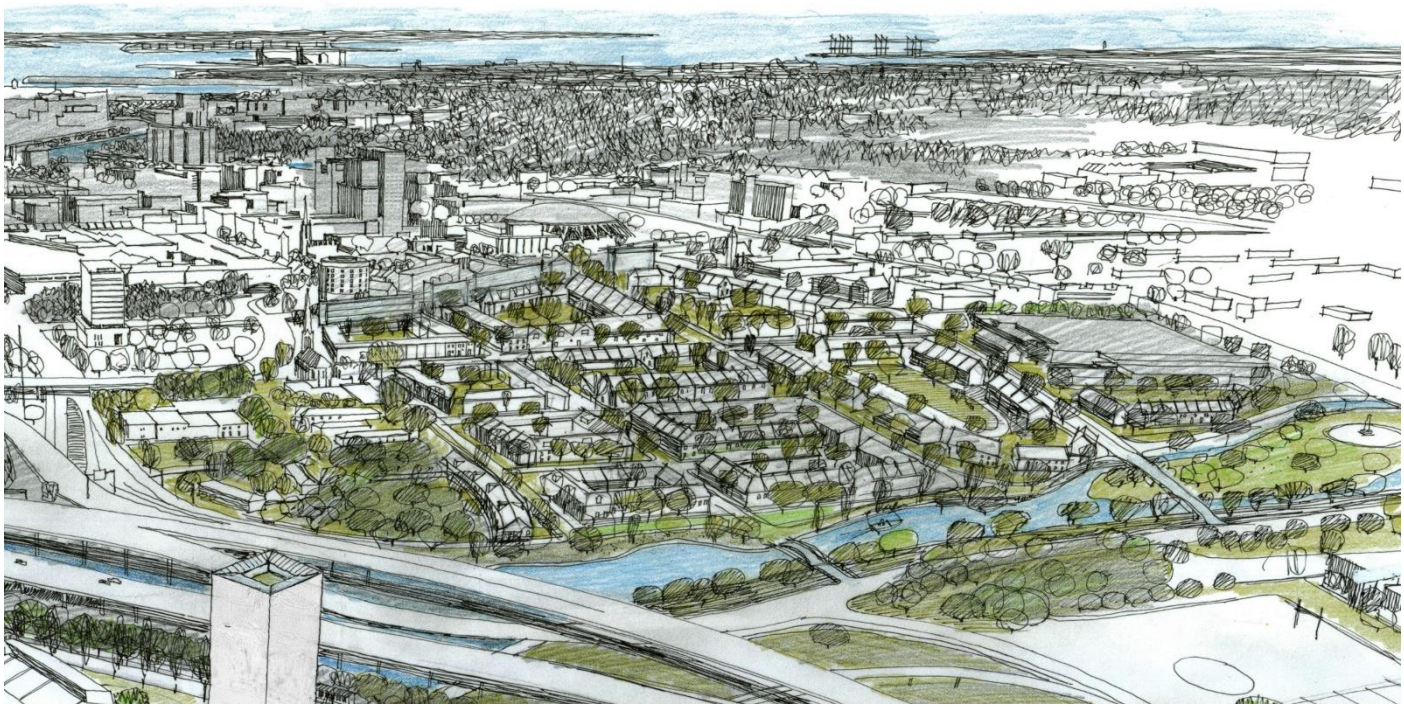
completed
• **Expected useful life of project**
• **How does the project conform to accepted design practices, established codes, standards, modeling techniques or best practices?**
• **Estimate resources by type and amount needed to maintain project and the source of those resources**
	• Analysis techniques are standard design practice. Some of the proposed green infrastructure techniques (bio-swales, parcel-scale storage, water parks) are very advanced "best practices".
	• Maintenance costs are:
	  ○ Landscaping, grass cutting
	  ○ Regular cleaning of culverts, backflow valves, and gates
	  ○ Periodic pump maintenance
	  ○ Periodic inspection of parcel-scale devices
	  ○ Maintenance of pervious pavement
	  ○ Inspection and cleanout of subgrade storage
	• Maintenance source = City of Norfolk

Budget For Project *(NOFA, p. 43; Crosswalk Checklist, p. 3)*	
U. **Project Cost**	Work in progress – approximately $150 million (rough estimate) for integrated and parcel level water management solutions. The cost of the overall project that includes revitalization and other aspects are currently being estimated.
V. **Amount of NDRC funds needed for project**	Work in progress - approximately $150 million for water management solutions. The costs associated with revitalization and other aspects of our long term resilience strategy, that incorporates the water management component we are seeking HUD to fund, will be covered by other sources.
W. **Committed and Potential <u>LEVERAGE</u> Sources and Status** *(For <u>direct leverage</u>, the documentation must also indicate that the funding is available to you for the activities directly related to undertaking your CDBG-NDR proposal.)*	Work in progress.

X.	**Sources of Committed and Potential <u>SUPPORTING COMMITMENTS</u> and Status** *(For <u>supporting leverage</u>, the documentation must indicate that the funds are available to you or to your Partners to carry out activities that directly support the overall proposal.)*	City of Norfolk Wetlands Watch ERP USACE HRPDC ODU/Hampton U The Norfolk Tides (ball park) Norfolk State DoD
Y.	**Describe Approaches to Scaling/Scoping/Phasing Of Project** *(NOFA, p. 43)*	Work in progress.
Z.	**Attach the Map of MID-URN Target Area with the project's location marked. On the map, outline or shade all tracts (with and without target population) that will benefit from the project.** The entire city except 3 tracks in the north/east portion of the city qualified as MID-URN Target Area.	



Newton Creek Watershed



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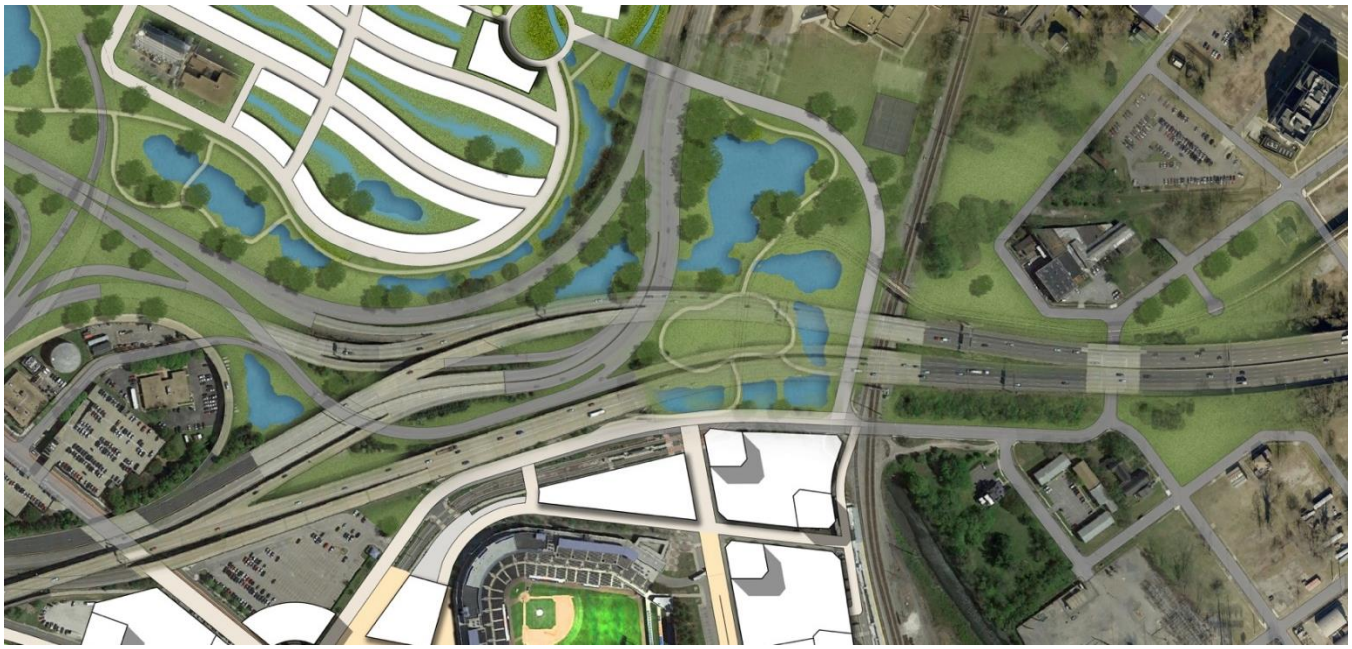

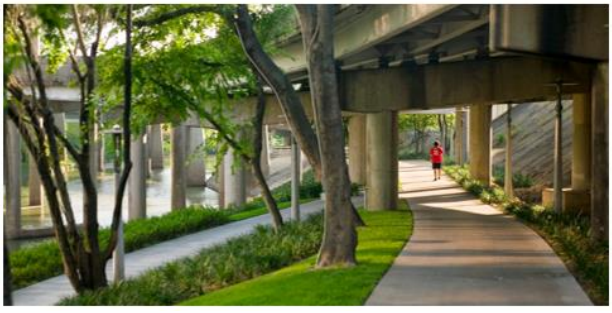

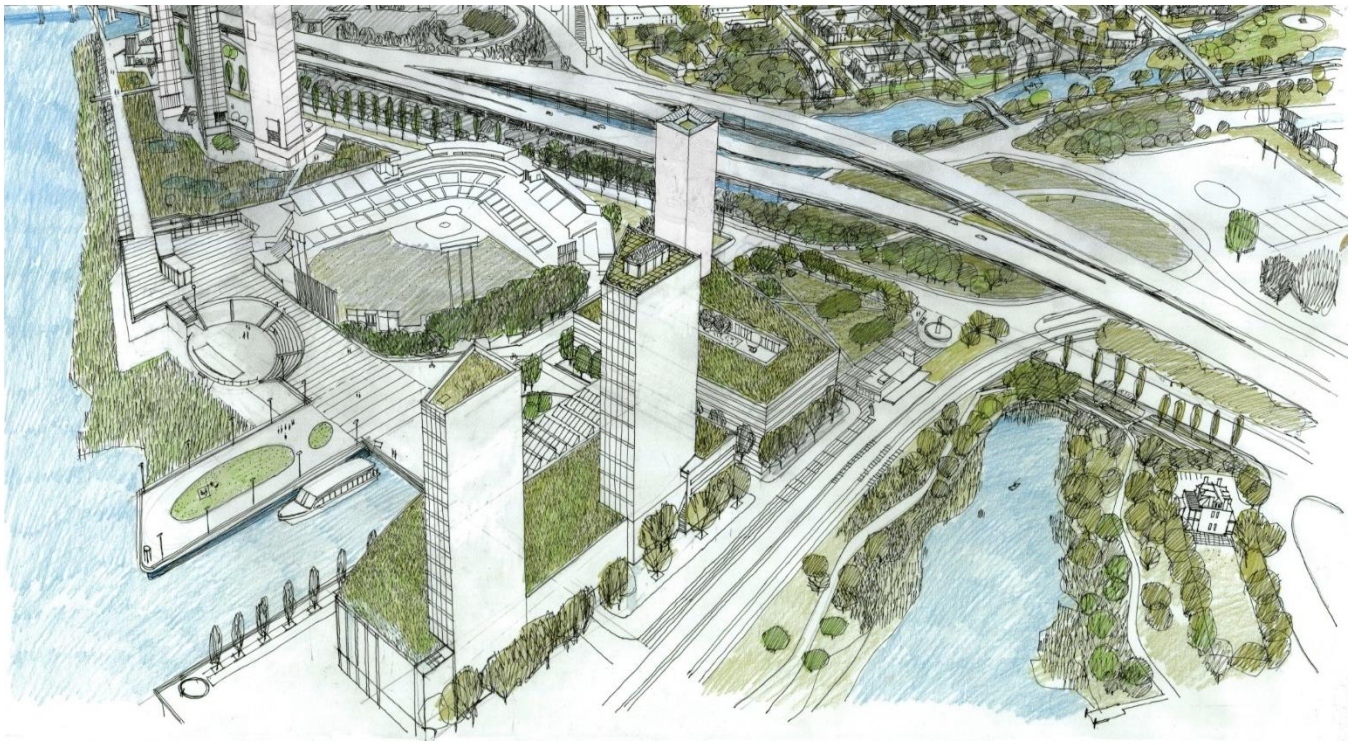

Retention Pond Considered

Ohio Creek Watershed (Chesterfield Heights Area):

Flood Protection Plan

River Star Residential and Curbside LID Concepts

Living Shorelines

Bank Stabilization

Wetlands Restoration

Current status: